

CLAIMS

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is as follows:

1. A fuel injector, comprising:

a spool slidable between a first position and a second position;
an open and closed solenoid positioned on respective sides of the spool;
an intensifier body positioned proximate to the spool;
a piston slidably positioned within the intensifier body;
a plunger being in contact with the piston, the plunger having a cross bore and a longitudinal bore in fluid communication with the cross bore;
a high pressure chamber formed below the plunger;
means for supplying fuel to a nozzle in fluid communication with the high pressure chamber, the means for supplying fuel extending within at least the intensifier body; and
means for supplying a pilot quantity of fuel between the high pressure chamber and the means for supplying fuel to the fuel nozzle.

2. The fuel injector of claim 1, wherein the means for supplying a pilot quantity of fuel is a throttle.

3. The fuel injector of claim 2, wherein the throttle has a cross section smaller than the means for supplying fuel to the nozzle.

4. The fuel injector of claim 2, further comprising a check disk positioned below the plunger, the throttle being located within the check disk.

1 5. The fuel injector of claim 4, wherein the throttle provides fluid communication
2 between the high pressure chamber and the means for supplying fuel to the fuel nozzle
3 extending within the check disk.

1 6. The fuel injector of claim 2, wherein the throttle is located within the plunger.

1 7. The fuel injector of claim 6, wherein the throttle provides fluid communication
2 between the high pressure chamber and the means for supplying fuel to the fuel nozzle
3 extending within the intensifier body.

1 8. The fuel injector of claim 7, wherein:
2 the means for supplying fuel to the fuel nozzle extending within the intensifier
3 body is a fuel bore; and
4 the throttle provides fluid communication between the longitudinal bore of the
5 plunger and fuel bore.

1 9. The fuel injector of claim 7, wherein the throttle is a clearance between the plunger
2 and a side wall of the intensifier body.

1 10. The fuel injector of claim 7, wherein the throttle is positioned within the high
2 intensity body.

1 11. The fuel injector of claim 2, wherein the pilot quantity of fuel is supplied through the
2 throttle during a pre stroke phase of the plunger.

1 12. The fuel injector of claim 11, further comprising a groove positioned within the

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2 intensifier body and in fluid communication with the means for supplying fuel extending
3 within at least the intensifier body.

1 13. The fuel injector of claim 12, wherein the pre stroke phase of the plunger is defined as
2 a downward distance prior to the cross bore communicating with the groove of the
3 intensifier body.

1 14. The fuel injector of claim 1, wherein the means for supplying fuel to the fuel nozzle
2 are fuel bores extending through at least the check disk and the intensifier body, the fuel
3 bore of the check disk and the fuel bore of the intensifier body being in axial alignment.

1 15. A check disk for a fuel injector, comprising:
2 a body having an upper surface and a lower surface;
3 a fuel bore extending between the upper surface and the lower surface;
4 a throttle providing fluid communication from the upper surface of the body to the
5 fuel bore; and
6 a fuel inlet check valve positioned within the check disk, the fuel inlet check valve
7 regulating fuel from a fuel storage to the upper surface of the body.

1 16. A plunger for a fuel injector, comprising:
2 a plunger body;
3 a cross bore positioned within the plunger body;
4 a longitudinal bore in fluid communication with the cross bore; and
5 a throttle positioned within the plunger body and having a smaller cross section
6 than the longitudinal bore.

1 17. The plunger of claim 16, wherein the throttle is in fluid communication with the

2 longitudinal bore.

1 18. An intensifier body of a fuel injector, comprising;

2 a fuel bore adapted to provide fuel to a nozzle of the fuel injector;

3 a throttle in fluid communication with the fuel bore, the throttle having a smaller

4 cross section than the fuel bore.

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